FLORIDA TECH

FLORIDA'S STEM UNIVERSITY

RMC - CSE Milestone 4

Liam Sapper

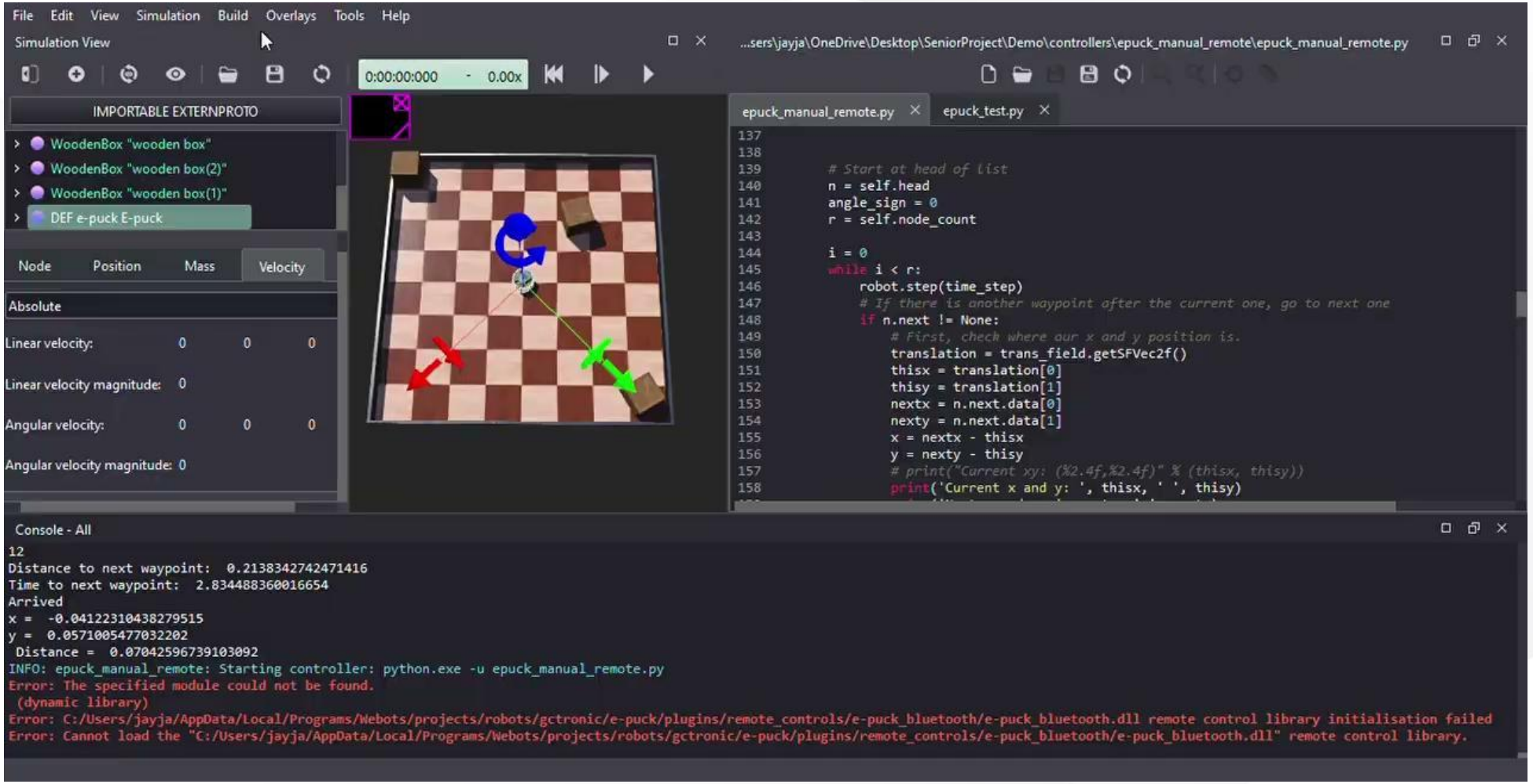
Contact & Meeting Information

- CSE Project Member: Liam Sapper - lsapper2020@my.fit.edu
- Faculty Advisor: Dr. Marius Silaghi - msilaghi@fit.edu
- Client: FIT's Robotic Mining Competition team (RMC), and by extension, NASA (the host of the Robotic Mining Competition).
- Head of RMC project:
  - Sidney Causey (scausey2021@my.fit.edu) - Aerospace Engineering
- Meeting Times: Wed. 4:30pm-5:30pm; Fri. 4pm-5pm

Progress Matrix

TASK	COMPLETION %	TO DO
1. Test, debug, and demo current simulated sofftware	100%	none
2. Achieve proper autonomous movement within simulation	80%	Fix accuracy of angling, accuracy of forward movement
3. Complete software portion of Mech/Aero Engineering CDR report and presentation	100%	none
4. ~~Research possible addition of radar to use for autonomous movement~~ Research on image processing	10%	Gathering more resources for studying
5. Start development of navigation GUI	10%	Create drawn-up layout design within python code, program working map and waypoint list

Tasks 1 + 2



FLORIDA TECH
FLORIDA'S STEM UNIVERSITY

Tasks 1 + 2

- Lots of fighting with the software, several supposed solutions were tried and none worked.
  - Turned out to be an issue with the time_step in while loops
- Made separate functions for turning and forward movement
- The system is functioning and successfully goes through every waypoint in the list
  - Still not completely accurate

Task 3

- Took up much of the work done this month
- Presentation slides as well as participating in the presentation itself was required
- CDR sections for software and navigation completed, basically a more complete form of the PDR done last semester.

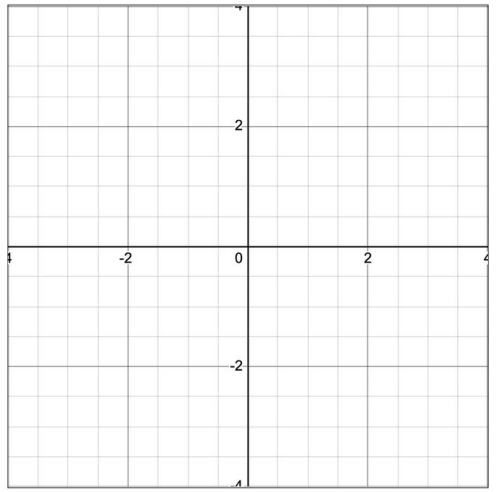
Task 4

- Research on radar was cancelled due to NASA limitations.
- Turned our attention towards image processing instead; allow robot to autonomously mark danger zones based on given “satellite photo”
- Not as much of a priority with the limited time left

Task 5

- Not much progress besides adjustments to design
- Removed planned buttons because of use of physical controller

WAYPOINT	XPOS	YPOS
1		
2		
3		
DIG POINT		



FLORIDA TECH
FLORIDA'S STEM UNIVERSITY

Milestone 5 Plan

TASK
1. Implement, test, and demo current simulated software
2. Work on translating code from simulation to hardware
3. Develop navigation GUI
4. Create poster and ebook page for Senior Design Showcase

M5 Task 1

- Improving accuracy of the navigation software
- Adding calculations for different auto nav speeds
- Transitioning code to hardware
- GUI Development

M5 Task 2

- Implementing different libraries to work with the chosen motors
- Adjusting math to account for robot's proportions
- Testing accuracy with physical robot

M5 Task 3

- Create working list to display waypoint data
- Create working grid accurately displaying robot's current position
  - Allow for waypoints to be displayed on grid as well
- Will be made as a desktop application

M5 Task 4

- Creating the poster for showcase
  - Will be working with RMC together for this

FLORIDA TECH

FLORIDA'S **STEM** UNIVERSITY

Thank you